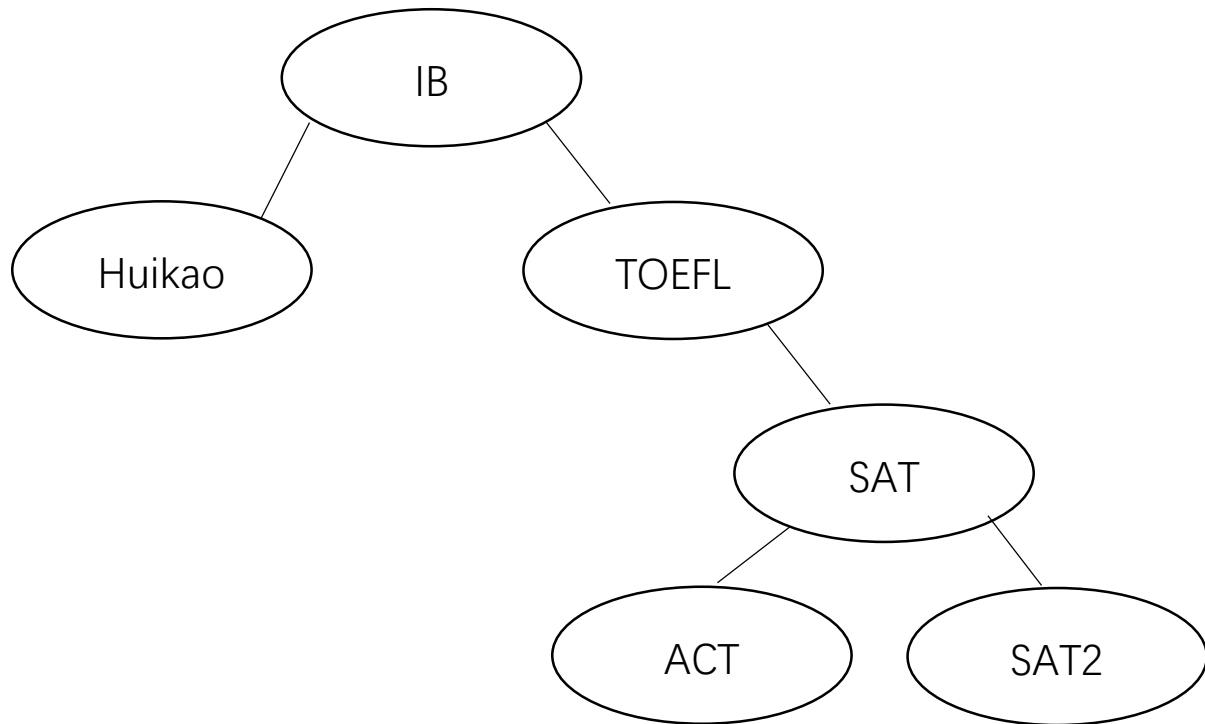


*With a tree, a leaf node is one that has no child nodes



(a) State the number of leaf nodes in the tree shown above. [1 mark]

(b) State the word contained in the right child of the node containing the word “TOEFL”. [1 mark]

(c) Identify the left subtree and the right subtree of the node “TOEFL”. [3 marks]

(d) State the words in the order that they would be retrieved using pre-order traversal. [1 mark]

(Go next page)

All of the words from a large dictionary are stored in a binary tree.

The tree is constructed from objects of the WordNode class.

```
public class WordNode
{
    String word;
    WordNode leftChild;
    WordNode rightChild;

    WordNode(String theWord)
    {
        word = theWord;
        leftChild = null;
        rightChild = null;
    }

    int countLeaves()
    {
        // lines of code missing
    }
}
```

(e) Outline two ways that the tree could be modified to allow access to the definition of the word. [4 marks]